

CORE / REQUIRED MODULES

SPH5001 Foundations of Public Health

Modular Credits: 0

This module motivates and introduces topics, issues and approaches that will be further developed in the MPH programme. It will focus on the origins, history and present state of public health in Singapore and globally and its underpinning ideals. Public health ethics, social-ecological determinants of health, and numeracy skills to make sense of risk and assess disease burden will be covered. Public health evidence-based and systems approach to solving complex public health problems with appropriate research methods will also be introduced.

SPH5002 Public Health Research Methods

Modular Credits: 8

This module provides students with the foundational knowledge of epidemiology and biostatistics, and introduces students to the key principles of qualitative research methods. Students will learn how to quantify the burden of disease in populations, identify potential risk factors, develop and test hypotheses. Key considerations for the design of observational, interventional, and screening studies, and basic skills related to the analyses and interpretation of data from such studies will be emphasised. Students will gain an appreciation of the complementary nature of qualitative and quantitative research methodologies in answering public health questions.

SPH5003 Health Behaviour and Communication

Modular Credits: 4

This module applies concepts and methods in social and behavioural sciences to evaluate and inform development of health promotion policies, programmes and services

It provides students with the principles and skills to address the social, psychological and environmental factors influencing behaviour and behaviour change. Upon completion of this module, students will be able to apply commonly used behavioural theories and models to change and evaluate behaviour at the individual, group and community level for the development of effective public health promotion interventions.

SPH5004 Introduction to Health Policy and Policy Analysis

Modular Credits: 4

The module provides students with an overview of health systems and the origin, development, and the various components that make up an effective health policy. Theoretical frameworks and concepts will be introduced to help students understand and analyse health policies and the challenges faced by stakeholders in the health system. Through a mix of lectures, in-class group discussion, and group work with case studies, students will describe, analyse and develop health policy solutions for common public health problems faced by Singapore and regional countries.

SPH5005 Practicum

Modular Credits: 8

This module is both a practice as well as a seminar course. Module requirements are fulfilled by planning and conducting a project in cooperation with an advisor over the course of 6 - 12 months. The project should involve collection of primary data, or an in-depth analysis of secondary data, and should be in the student's selected focus area, if they've chosen one.

CO5210 Practicum (For students admitted before AY2017/2018)

Modular Credits: 4

This module is both a practice as well as a seminar course. Module requirements are fulfilled by planning and conducting a project in cooperation with an advisor, presenting the results of this project and attending and participating in the series of weekly student presentations held in the second semester. The project should involve collection of primary data or an in-depth analysis of secondary data and should be in the student's selected area of specialisation.

ELECTIVE MODULES

SPH5101 Advanced Quantitative Methods I

Modular Credits: 4

Pre-requisites: CO5103 (B-) / SPH5002 (B-)

In this module, the principles of statistical modelling will be introduced, and statistical models such as multiple linear regression, logistic regression and Cox proportional hazards model will be applied to a variety of practical medical problems. Methods for analysing repeated measures data, assessment of model fit, statistical handling of confounding and statistical evaluation of effect modification will also be discussed.

SPH5102 Design, Conduct and Analysis of Clinical Trials

Modular Credits: 4

Pre-requisites: CO5102 and CO5103 / SPH5002

In this module, issues in clinical trials, including blinding randomisation, sample size, power, ethical, regulatory, and quality-of-life issues will be addressed. Interim and sequential analyses, analysis of multiple treatments and endpoints, stratification and subgroup analyses, as well as meta-analysis of randomised controlled trials will also be discussed. Although particular emphasis is given to the evaluation of treatment in Phase III clinical trials, early phase trials studies will also be covered.

SPH5103 Collection, Management & Analysis of Quantitative Data

Modular Credits: 4

This module is an introduction to collection, management and data analysis of quantitative surveys in public health research, with strong emphasis on acquiring hands-on experience for handling public health data with the STATA software. It will cover essential concepts such as sampling and design of questionnaires as well as practical components such as data storage, management, and basic statistical analysis of questionnaire data.

SPH5104 Healthcare Analytics

Modular Credits: 4

Pre-requisites: CO5103 / SPH5002

This module will cover major topics in healthcare analytics, including clinical related analytics (diseases, medication, laboratory test, etc.) and healthcare operations related analytics (resource planning/scheduling, care process analytics and improvement, admission and readmission, etc.). Students will learn the insights of these different healthcare analytics areas, and how to select the right analytics techniques for these healthcare analytics problems.

SPH5201 Control of Communicable Diseases

Modular Credits: 4

This module focuses on infectious diseases of public health concern in Singapore and internationally. The course will cover concepts in the prevention, surveillance and control of infectious diseases, with a focus on vector-borne diseases (in particular dengue and malaria), foodborne diseases, HIV/AIDS and sexually transmitted diseases, tuberculosis, acute respiratory illnesses, and nosocomial infections. In addition, students will be exposed to concepts in the evaluation of vaccines and vaccination programmes, and will obtain hands-on experience in outbreak investigation through a simulated outbreak exercise. Students will learn to critically appraise and discuss the application of current control strategies. This module is highly relevant for students who intend to work in infectious disease control in local and international governmental and non-governmental organisations, or who wish to pursue academic research on infectious diseases from a public health perspective.

SPH5202 Control of Non-Communicable Diseases

Modular Credits: 4

In this module, the public health approach to non-communicable disease control will be illustrated with integration of epidemiological parameters (i.e. risk factors, prevention, surveillance) and the WHO guidelines of Control of NCDs including life course and common lifestyle approach and evidence based practice. Students will read, critically appraise and discuss the application of some relevant epidemiological studies. Finally, they will perform a literature search to identify relevant community programmes to enhance current control of NCDs in Singapore.

SPH5203 Advanced Epidemiology I

Modular Credits: 4

Pre-requisites: CO5102 and CO5103 / SPH5002

This module covers advanced methods for the design, conduct, analysis and interpretation of epidemiologic studies. The main focus is on analytical studies that aim to identify risk factors for diseases particularly case-control and cohort studies. Topics include causal inference, study design, methods of handling confounding and identifying effect modification, measurement error and information bias, selection bias, lifestyle and molecular epidemiology, and meta-analysis.

SPH5204 Nutrition and Health – Fundamentals and Applications

Modular Credits: 4

This module introduces the concepts and principles underlying nutrition in relation to health and diseases, so as to better understand and address population nutrition challenges. Content areas include an overview of nutrition as a major determinant of health and disease; methods to assess nutritional status; maternal and child health through the lens of a life course perspective; nutrition during ageing and evaluation of effective nutritional interventions. This class will include discussion of nutrition policies and strategies, multi-sectoral approaches and the importance of public- partnerships aimed at preventing chronic diseases.

There will be a strong emphasis on gaining practical skills in dietary assessments, critical appraisal of scientific literature and media articles relating to diet and nutrition and communication of nutritional science to the public. The teaching approach involves class interaction and provides opportunities for self-reflection.

SPH5205 Urban Outbreak Management

Modular Credits: 4

An effective outbreak management system is core to safeguarding public health and reducing morbidity and mortality. Outbreak investigation, when properly managed, fosters cooperation between stakeholders in rapid mobilization, community engagement, communications, and business continuity.

By introducing a combination of hard and soft skills, as well as knowledge and tools related to field epidemiology, environmental health, microbiology, communication and social sciences, it is designed for application of knowledge and skills to manage, foresee and solve outbreak problems efficiently and effectively.

SPH5301 Occupational Health Practice

Modular Credits: 4

This module focuses on knowledge and competencies of occupational health (OH) professionals to manage Occupational Health Services (OHS) and participate in company management activities e.g. the implementation of integrated management systems, health promotion programmes, and emergency preparedness.

It addresses practical challenges of OH professionals who work in a business environment by stressing their contributions to the overall business processes and goals, its operations and the health of its employees. It aims to enable OH professionals to play an active part in the management of a company and its workforce.

SPH5302 Occupational Toxicology and Industrial Hygiene

Modular Credits: 4

Exposure to environmental hazards such as toxins, chemicals, biological agents, noise and radiation are oftentimes unavoidable, especially in the workplace setting.

This module covers basic concepts as well as specific topics on Toxicology and Industrial Hygiene that are relevant to current occupational and public health practice.

Emphasis will be on the approach to major environmental and occupational toxins and hazards. Case studies will be used to allow participants the opportunity to practise effective problem-solving skills.

SPH5303 Workplace Assessment

Modular Credits: 4

Pre-requisites: CO5305 and CO5306 / SPH5302

The workplaces to be visited represent common manufacturing industries such as electronics, metalworking, , chemical manufacturing, food, agriculture and health care industries. There will also be visits to a diving unit and an aeromedical centre. Reading of the work processes and work activities of the workplace to be visited is expected before each visit, and participants are required to make observations and assessments of the work environment during the visit. The visits will be followed by class presentations and discussions and submission of a report of the workplace visited.

SPH5304 Occupational Ergonomics

Modular Credits: 4

This module covers both ergonomics/human factors and basic work physiology. It emphasises the practical aspects of how to fit the worker to the job and how to fit the job to the worker and the need for a multifactorial approach to the study of ergonomics/human factors.

The basic principles of human, work and environmental factors related to occupational disease and work related illness will be discussed.

Common issues related to work and stress, work and performance will also be covered in the lectures.

Work place assessments will also be stressed to evaluate various ergonomic factors in the implementation of a workplace ergonomics programme and the investigation of work-related accidents.

In addition to lectures and tutorials, case studies from industry will also be discussed.

SPH5305 Clinical Occupational Medicine

Modular Credits: 4

This module serves as a refresher course for practising physicians with emphases on the occupational aspects of clinical practice.

In addition to lectures, slide quizzes and tutorials, there will be clinical sessions where participants clerk hospital in-patients and out patients and present their case histories for class discussion. Participants will also have attachments to an occupational medicine referral clinic in an outpatient setting.

There will be in-depth coverage of occupational dermatology, noise-induced hearing loss and occupational lung disorders. There will also be practical session on lung function test, audiogram and Pneumoconiosis Chest X-ray readings.

At the end of the module, participants should be able to diagnose, manage, and understand the principles of prevention of occupational and work-related diseases.

SPH5306 Environmental Health

Modular Credits: 4

Rapid urbanisation has resulted in an increasingly built environment with new dynamic interactions between the natural (biosphere) and man-made (technosphere). This in turn leads to emerging health concerns peculiar to an urbanised built environment. Events in the natural environment continue to be of public health importance, especially climate change as evidenced by extreme weather events. In addition, the workplace environment is of special concern as most adults spend the greater proportion of their waking hours there.

This module will introduce students to important issues in environmental and occupational health and equip them with basic skills in identifying and mitigating environmental risk factors, both in the general and workplace environment.

SPH5307 Principles of Workplace Health

Modular Credits: 4

Specifically designed for health professionals working in employee health. It aims at developing competent professionals who demonstrate competencies, knowledge and skills to provide a high standard of care in health protection and prevention for the working population, and are effective in their work and communications with others and demonstrate personal integrity and leadership. The course focuses on teaching knowledge, skills and competencies regarding the

- Assessment of exposures hazardous to humans in
- the work environment
- Health effects of these exposures
- Possible options to reduce exposures
- Singapore legal environment for Workplace Safety & Health (WSH)
- Functions of an Occupational Health Clinic
- Health promotion at the workplace and the Total
- Workplace Safety and Health (WSH) approach

SPH5401 Health Economics and Financing

Modular Credits: 4

This module addresses the economic and financing aspects of the production, distribution, and organization of health care services and delivery. This includes the structure of health care delivery and insurance markets, demand for and supply of health services, pricing of services, cost of care, financing mechanisms, and their impact on the relevant markets. A special emphasis will be given to market failures and the role of government in the market for health services. Through textbook readings and discussions of seminal articles and more recent empirical applications in health economics, students will learn the economic way of thinking. They will be given the opportunity to showcase these skills through a series of research papers written throughout the semester that will culminate with a final manuscript that provides an in-depth analysis of a critical health issue.

SPH5402 Management of Healthcare Organisations

Modular Credits: 4

This practitioner-led module is targeted at participants with a basic background in management (either through academic study or practice) and equips participants to work with and manage care delivery services. Teaching will be through interactive lectures, group activities and panel discussions. Participants will be expected to actively share their experiences and learn collectively.

Remarks: Although conducted outside office hours (Thursday evenings), site visits will be organised during office hours to enable participants to see first-hand 'Management of Healthcare Organisations' and learn from leading edge practitioners.

SPH5403 Medical & Humanitarian Emergencies

Modular Credits: 4

This module provides a practical introduction to disaster management.

Medical and humanitarian emergencies are complex challenges requiring urgent, thoughtful and coordinated action. Participants will be equipped with the basic knowledge and skills to plan and manage humanitarian assistance to disaster-affected populations, in accordance with internationally recognised guidelines in life-saving areas of humanitarian response.

The course is designed for individuals involved in disaster response, mitigation or preparedness, in a professional or voluntary capacity, within the regional or international humanitarian and development sectors.

SPH5404 Measuring and Managing Quality of Care

Modular Credits: 4

This module provides an introduction to the concepts and techniques used to measure and improve the quality of healthcare. It will address current concerns with patient safety and medical errors, and explore systemic approaches to harm reduction. Participants will understand the methodologies and instruments for the measurement of quality in healthcare, including clinical outcome indicators, healthcare professionals' performance measurement and patient satisfaction surveys. Strategies for managing quality, including the tools for continuous quality improvement in healthcare organisations, will be presented.

SPH5405 Introduction to Health Services Research

Modular Credits: 4

Pre-requisites: CO5102 and CO5103 / SPH5002

This module is an introduction to the various domains of and methods for health services research. It is designed to provide students with a panorama of health services research and its applications and the information for further learning. The module integrates elements of statistics, psychometrics, health economics, and incorporates a diverse range of subjects including patient-reported outcomes, decision analytic modelling, and cost-effectiveness analysis.

SPH5406 Contemporary Global Health Issues

Modular Credits: 4

This module offers students a panoramic overview of the evolving global health landscape in today's globalised society which is characterised by unprecedented inter-connectedness. Public health problems and consequences are now easily trans-national, if not global.

We will focus on key cross-cutting thematic areas linking Health with the Sustainable Development Goals (SDGs)

SPH5407 Programme Evaluation

Modular Credits: 4

This course is an introductory graduate level course to programme evaluation, broadly covering formative, process, and impact evaluation. Formative evaluation includes needs assessment, a tool typically used for programme planning, which is an inter-related activity to evaluation. As part of this course, students will be developing evaluation strategies for an actual public health programme. This is an opportunity to practice evaluation theory, design, and planning within real world constraints.

SPH5408 Public Health and Ageing

Modular Credits: 4

In this module, an overview of the ageing population and its increasing relevance for public health planning and policy, both in Singapore and internationally. Major topics include demography of ageing, normal (physiological and biological) and abnormal (physical and mental) ageing, prevention of ageing-related diseases and compression of morbidity, health and social services and policies for older persons, and medico-legal and ethical issues of care for the older persons. Students will learn how to apply their knowledge to critically appraise health and social programmes and policies for older persons and apply medico-legal and ethical principles in the care for older persons.

SPH5409 Qualitative Methods in Public Health

Modular Credits: 4

Qualitative methods in Public Health will familiarise students with the range of related data collection and analytic methods, as well as ethical considerations and ways to best communicate this approach. Students will learn practical techniques to improve the quality of data collection, including: In depth interviews, focus groups and observational methods. We will also explore lesser-known approaches such as using photo voice or how to 'walk through spaces'. Emphasis will be given to data management and transparency in analyses, the best ways of doing these, using practical policy relevant methods.

SPH5410 Developing health proposals using DME skills & tools

Modular Credits: 4

Two of the most important skills that public health practitioners need to develop are programme design and proposal writing. These two skills are inseparably linked: they are two sides of the same coin. A poorly designed project or programme will have very

little chance of successfully competing for funds, while an innovative, well-conceived project will never get funded unless it gets written into a good proposal. A good programme design in a good proposal can lead to better implementation and management, and sets the stage for good monitoring and evaluation. In turn, a project executed well has better chances for re-funding and expansion by donors.

This skills building design, monitoring and evaluation (DME) course is designed to introduce the potential proposal writer to the working environment that he will eventually confront repeatedly. It requires living through the process of applying good principles of programme/project design in developing a proposal.

Remarks:

It is recommended that students have completed CO5102 Principles of Epidemiology and CO5103 Quantitative Epidemiologic Methods or SPH5002 Public Health Research Methods prior to reading this module

SPH5411 Information Technology in Healthcare

Modular Credits: 4

Students will learn about use of Information Technology in Singapore healthcare. They will gain knowledge and skills on managing IT projects in their workplace, learn about key considerations for IT project success, and be able to conduct a basic evaluation of healthcare IT products.

SPH5412 Economic Methods in Health Technology Assessment

Modular Credits: 4

This course aims to provide an applied introduction to Health Technology Assessment (HTA) research in order to enable students to begin conducting their own research and/or to understand research conducted by others. Health econometrics, cost-effectiveness and economic evaluation in healthcare, and conjoint analysis will be covered. Examples of economic analyses that have been used in all stages of HTA research, starting with quantifying economic burden of illness studies, to cost-effectiveness of particular health technologies, to budget impact and pricing will be included. Prior knowledge of basic statistics is recommended.

SPH5413 Women's, Children's and Adolescents' Health

Modular Credits: 4

Investing in the health of women, children and adolescents is critical for every nation's development.

The course applies a life-course perspective to critically explore the issues affecting the health of mothers, young children and adolescents. We will examine the socio-economic, behavioural and political determinants of maternal, child and adolescent health, as well as policies, programs and services to reach them. The challenges, strategies and potential innovations to more effectively improve their health and wellbeing will be a major focus.

These will be linked to global efforts towards achieving the Sustainable Development Goals (SDGs) related to health and well-being, education, gender equity, and poverty reduction.

SPH5414 Informatics for Health

Modular Credits: 4

Health informatics transforms health care by analyzing, designing, implementing, and evaluating information and communication systems that enhance individual and population health outcomes, improve care, and strengthen the clinician-patient relationship.

SPH5501 Public Health Communication

Modular Credits: 4

Pre-requisites: CO5203 / SPH5003

This module focuses on the design, implementation, and evaluation of communication programmes designed to change or reinforce health behaviour.

Emphasis will be on the step by step process of

1. formative research and analysis (including use of conceptual frameworks, audience research, and assessment of the media, policy and service environment),
2. theory-based and evidence-based strategic design,
3. message development, pretesting and materials production,
4. implementation and monitoring, and
5. theory-based evaluation and dissemination of findings.

Upon completion of this module, students will be able to develop a work plan for a health communication project.

SPH6003 Nutritional Epidemiology

Modular Credits: 4

Pre-requisites: CO5102 and CO5103 / SPH5002

Dietary exposures have an important impact on health, but are highly complex and difficult to assess. This module covers methods for the assessment of diet, nutritional status, and body composition including novel developments such as the use of metabolomics and genetics. It also covers the design, conduct, analysis, and interpretation of epidemiological studies on diet and health. Students will be trained in the interpretation of published studies, the design of studies, and the analysis of data on diet and health. The emphasis of this course will be on the application of methods to the research projects of the students.

SPH6004 Advanced Biostatistics

Modular Credits: 4

Pre-requisites: Students interested in this module should have background in Statistics.

This module will introduce several advanced topics for analysing large or complex datasets, with a particular emphasis on biomedical and epidemiological data. Classical strategies for statistical inference, variable selection and model assessment are less efficient when the dimension of the dataset is large. This module will introduce Bayesian techniques and multivariate data analysis in an applied framework that combines both computing and theory, and also overviews the problem of multiple testing correction common in, for example, genomics and proteomics studies.

The programme reserves the right not to offer a module if the number of MPH students taking it for credit is fewer than 10.